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River and Lake Restoration: Changing Landscapes – An Introduction

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In July of 2005, the Universities Council on Water Resources and the National Institutes of Water Resources held a joint national conference, entitled *River and Lake Restoration: Changing Landscapes*. The conference was held in Portland, Maine. Approximately 160 people attended the conference including academics, federal and state government researchers and policy makers, leaders of watershed restoration efforts and students.

The articles in this issue highlight the diversity of topics presented at the conference, but also exhibit distinct overlaps and emphasize the interdisciplinary nature of watershed management. I hope this subset of papers serves to illustrate the *changing landscapes* of our river and lake restoration efforts. Changing physical landscapes, but also changing institutional and legal landscapes are evidenced throughout. As river and lake restoration efforts and projects take center stage around the country, we are beginning to see changing landscapes on all levels. Sessions ranged from those on aquatic invasive species to case study restoration projects in the Everglades and in Maine to those on innovative water resources education programs. Other sessions covered economic impacts, dam removal, water quality and restoration of sea-run fisheries. The articles here provide a framework and offer recommendations for decision makers.

The first five papers in this issue are based on the Plenary sessions from the conference. These are divided into three sections. The first section includes two papers intended to highlight the large and difficult issues associated with decision-making on rivers and lakes. The second section covers salmon restoration needs and efforts. The third section includes an example of an unprecedented restoration agreement

for the Penobscot River in Maine. Following the Plenary papers are two sections focused more specifically on economics and policy.

Restoration Decision Making: Challenges

The first two Plenary speakers set the stage for the conference by highlighting the complexities associated with restoration and research needs for decision making. John Loomis discusses the importance of including *all* economic values while Duncan Patten focuses on the intersection of science and policy.

John Loomis emphasizes the importance of including both use and passive values when making decisions about restoration. Using two case study examples, the Elwha River Dam removal and the Lower Snake River Dam removal, he shows how inclusion of these values has influenced decisions and explains the nature and importance of their inclusion.

Duncan Patten emphasizes the importance of science and the role of science for restoration activities, but also highlights the need for understanding historic perspectives and adaptive management. He wisely reminds us, “To be successful, restoration has to occur within the constraints of the biophysical and sociopolitical worlds. Ignoring the interplay between these two ‘worlds’ will not only create problems for the restoration practitioner, but potentially end in failure.” He concludes with a list of recommendations based largely on the use of adaptive management concepts and suggests that monitoring, while included as his final recommendation, must also be performed throughout the restoration process.

State of the Salmon Fisheries and the Need for Interdisciplinarity

In the first of two papers on salmon fisheries, David Montgomery emphasizes the need for interdisciplinary training for “integrating both historical and process-oriented perspectives in the practice of restoration ecology.” He highlights the history of decline of salmon fisheries worldwide and asks provocative questions about balancing human needs with those of salmon. The complexities and multi-layered sources of information necessary to make decisions emphasize the need for interdisciplinary training in aquatic ecological restoration.

In the second of the two papers, Andy Goode discusses the current state of migratory fish in the Gulf of Maine including the Atlantic Salmon fishery and details some of the restoration efforts currently being undertaken. He outlines the decline of anadromous fisheries in the Gulf of Maine and highlights the cumulative impact of dams on those fisheries. Cultural, economic and ecological values have all been lost in the decline of these fisheries. Goode outlines past management failures, but also points to some potential solutions and reasons to be optimistic about restoration. The Penobscot River Restoration Project is one reason for optimism.

A Possible National Restoration Model: The Penobscot River Project

Laura Rose Day, Director of the Penobscot River Restoration Trust and winner of the 2005 UCOWR Public Service Award, details the Penobscot River Restoration Agreement. This agreement between the Federal Government, the State of Maine, Pennsylvania Power and Light (owner of the dams), the Penobscot Indian Nation and a coalition of environmental organizations aims to remove two dams on the lower Penobscot River and build fish passage around a third dam, while maintaining 90 percent of the hydropower production with upstream facilities enhancements. This win-win agreement is unprecedented in scale and scope. Could this project serve as a national model?

Dam Removal and Restoration: Economic Aspects

Mark Smith proposes a taxonomy of dam removal projects. He proposes examining physical taxonomy (e.g. size, purpose, sediment movement, etc) as well as economic taxonomy (e.g. uncertainty, inclusion of non-market values, time horizon etc.) and suggests inclusion of these properties for decision-making.

Noelwah Netusil presents a case study example of the hedonic property value valuation method. The case study is an urban watershed in Oregon. Her empirical analysis shows that “regionally significant” habitat does indeed have a positive impact on home prices. Residential lots with high ecological habitat value have a premium placed on them by home buyers while those with lower valued habitat do not. As emphasized in the Loomis paper, inclusion of these types of values is important for good and thorough decision making.

Policy

Mark Dunning and Gerry Galloway describe and outline the *Second National Water Resources Policy Dialogue* held in February 2005. Dialogue outcomes resulted in some areas of agreement on key themes for improvement in water resources including (1) integrated approaches, (2) consistent and clear vision, (3) greater collaboration, and (4) information for sound decision making. Dunning and Galloway discuss these themes and present the “emerging water vision.”

In the final paper in this issue, Erik Webb outlines current directions in national water research funding and policy. Webb discusses options for balancing water supplies with water demands and federal policy development in this area. He describes the Office of Science and Technology Policy’s Subcommittee on Water Availability and Quality reported needs of 2005 which include; (1) comprehensive assessments of availability and use; (2) quantifiable and defensible estimates of environmental water needs; (3) research on water reuse, desalination, aquifer storage, etc.; (4) a better understanding of socioeconomic factors; and (5) good water forecasts. He also points to the second national water policy dialogue (see Dunning and Galloway paper in this issue) for

additional suggestions on defining roles for policy-making. Webb also provides recommendations and strategies that came out of other recent meetings and workshops (e.g. the Senate Energy and Natural Resources Committee workshop on water) as well as on-going assessment efforts. Finally, Webb highlights some innovative solutions for expanding water supplies and meeting future needs and emphasizes the need for integrated Federal policy on water resources.

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Changing Landscapes and Future Directions

The articles that follow illustrate the constantly *changing landscapes* of our watersheds and our watershed management policies. They highlight the need for good science, a knowledge and understanding of history and of cultural and economic values. Combined, they offer numerous suggestions and recommendations for future decision making. Interdisciplinary teaching, training, and research all need to be emphasized and supported. The interdisciplinary UCOWR/NIWR conference held in Portland, Maine offered an opportunity for the sharing of information and for collaborative discussion and future research. We bring the highlights of this conference to you in this issue of the *Journal of Contemporary Water Research and Education*.

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